

CoopATS: the Cooperative Air Traffic Services concept

**José M. Roca
AGC Programme Manager
Eurocontrol**

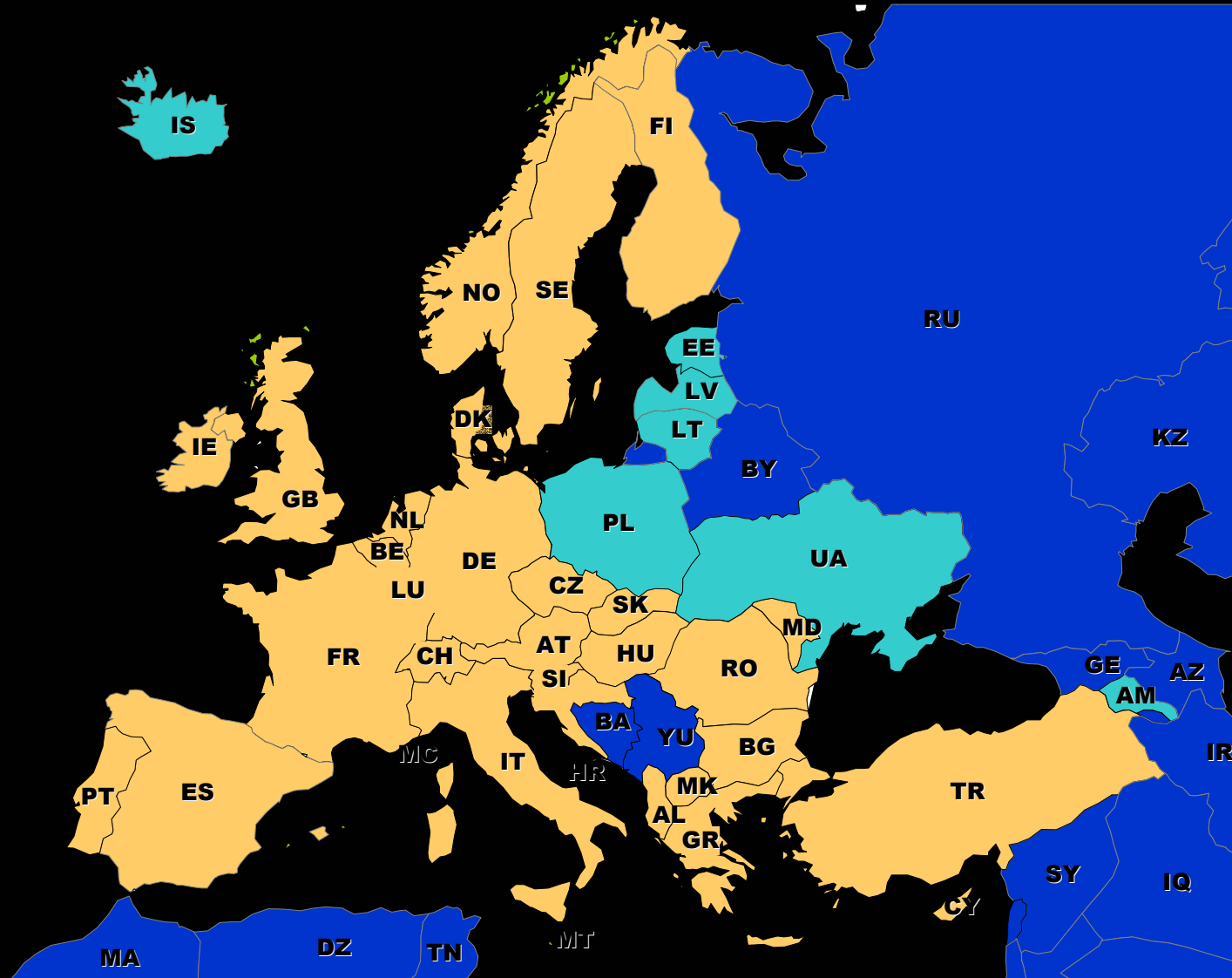
Eurocontrol Mission



To harmonise and integrate Air Navigation Services in Europe,
aiming at the creation of a
uniform Air Traffic Management System
for *civil and military* users,
in order to achieve the *safe, orderly, expeditious and economic*
flow of traffic throughout Europe.
(Article 1 of the revised Convention)



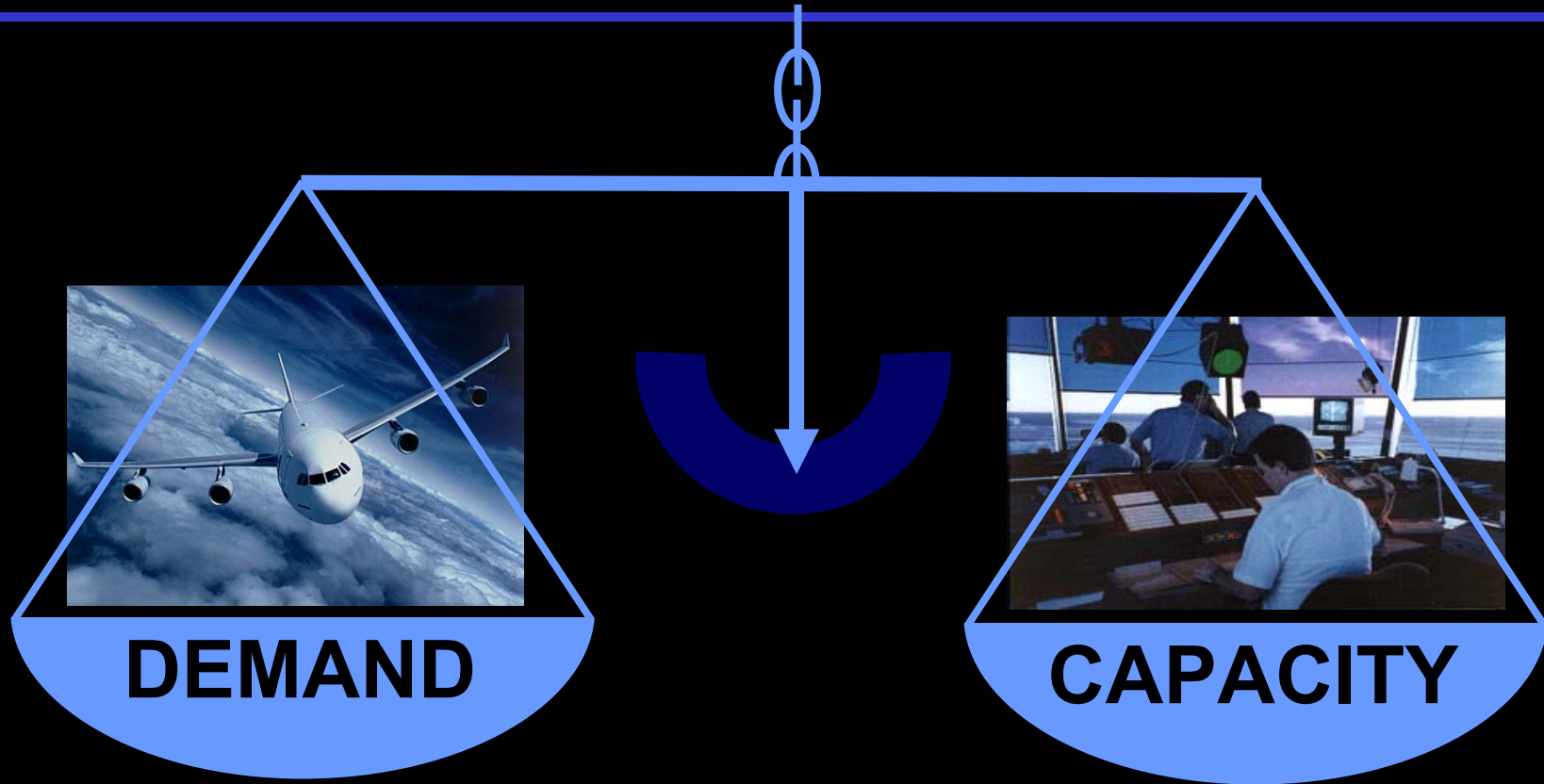
Eurocontrol Member States



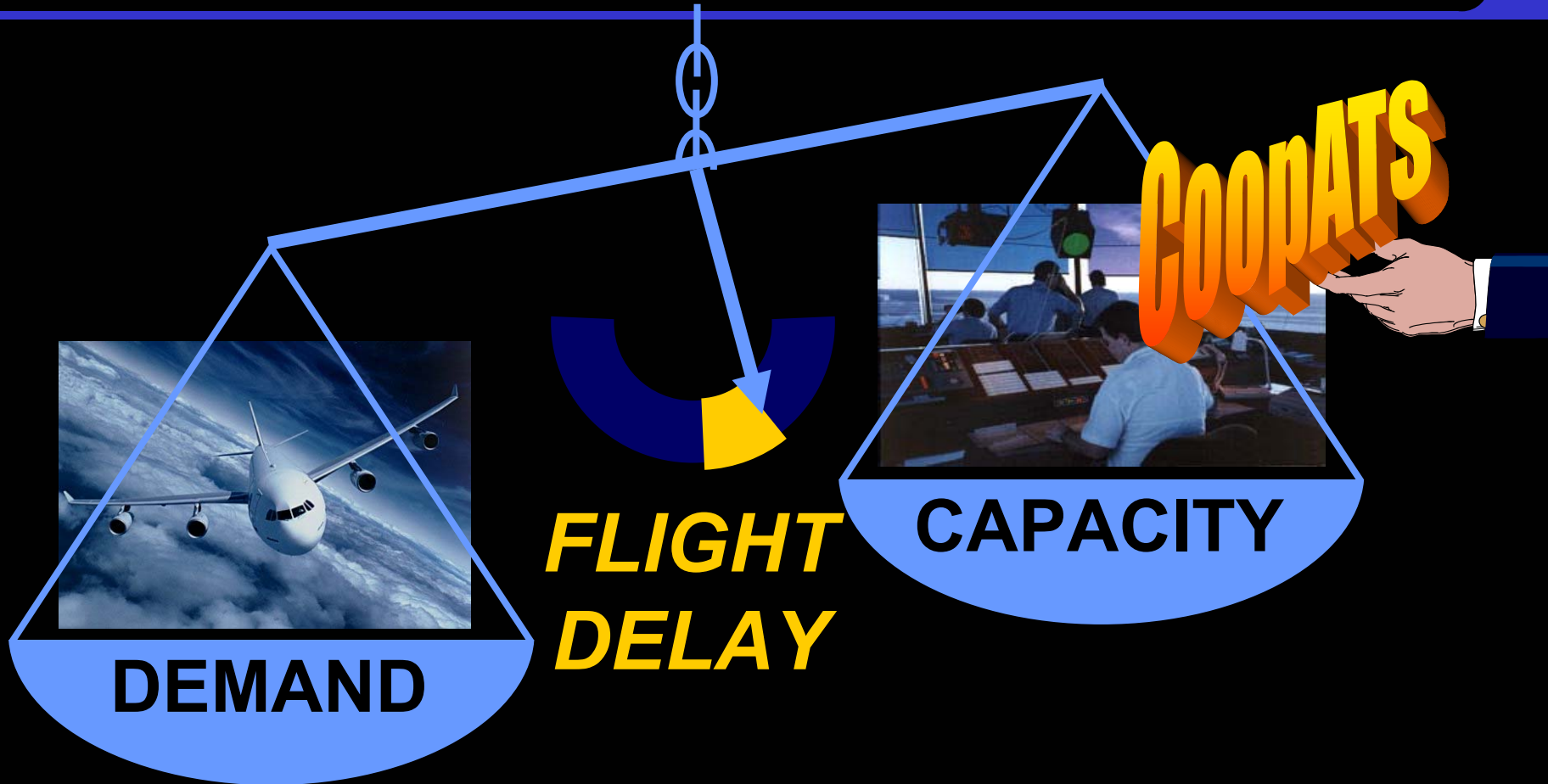
- **Management of pan-European Programmes**
- **Operation of a Central Flow Management Unit**
- **Research & Development work aimed at increasing Air Traffic Control capacity and safety in Europe**
- **Collection of Route Charges on behalf of Member States and through bilateral agreements with non-Member States - 4.4 B € billed in 2001**
- **Provision of Air Traffic Services**
 - Management of an international (4 States) ATC Centre
 - Development of an international (8 States) ATC Centre
- **Provision of training, education and knowledge transfer in Air Navigation Services inside and outside Europe**

Total 2002 budget: 612 M €

The Problem



The Problem



SAFETY **ECONOMY** **ENVIRONMENT**

What is CoopATS?



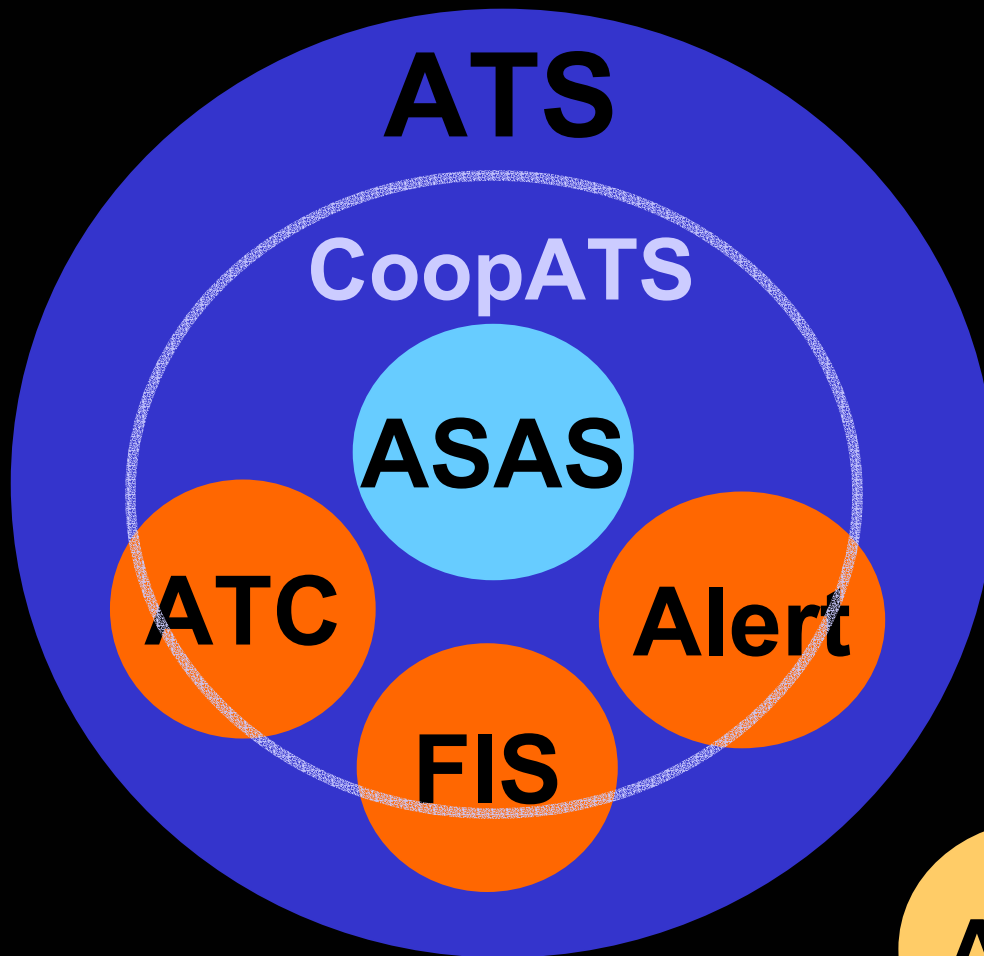
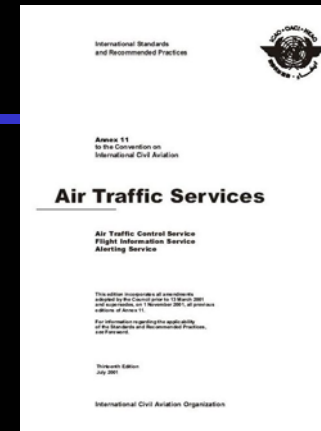
COOPERATIVE AIR TRAFFIC SERVICES

The answer to: What is the best way
to introduce datalink into ATS?

The Vision for the future ATS



CoopATS Scope



Air Traffic Services

Air Traffic Control service
Flight Information Service
Alerting service

Airborne Separation
Assistance Service

ATFM

Air Traffic Flow Management
AirSpace Management

ASM



Pilots are busy...



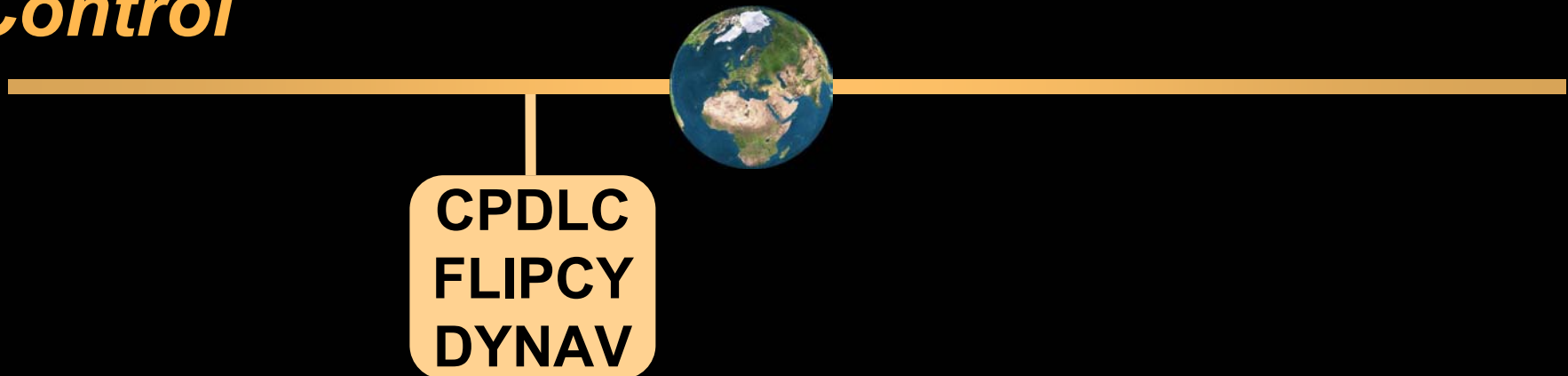
CoopATS Concept



***Trajectory
Control***



Free Flight



CLEARED FL 390

WILCO

DIRECT TO EEL

WILCO



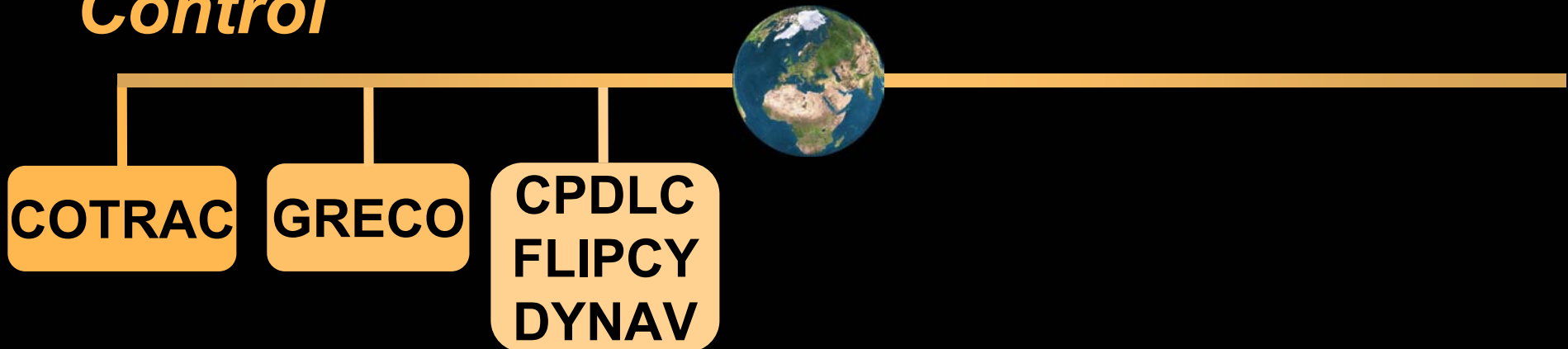
CoopATS Concept



***Trajectory
Control***



Free Flight



Power up
Pushback
Take off

Planner
Executive



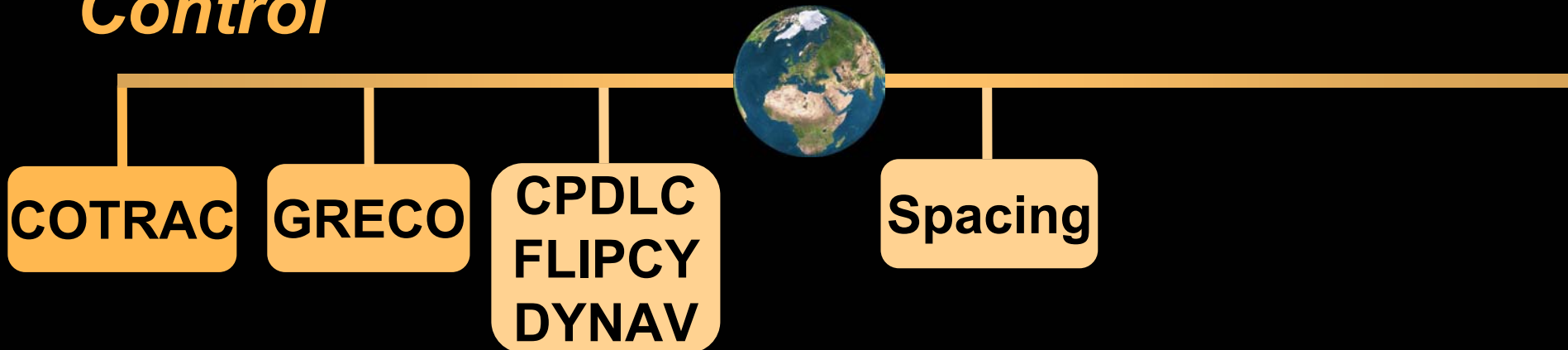
CoopATS Concept



***Trajectory
Control***



Free Flight



Sequencing and Merging



Cockpit view

Spacing Task



CoopATS Concept



***Trajectory
Control***

Free Flight



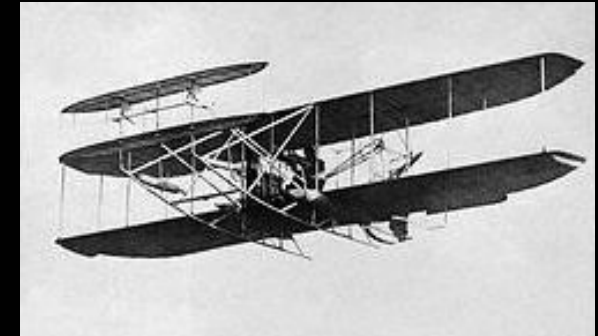
CoopATS Concept



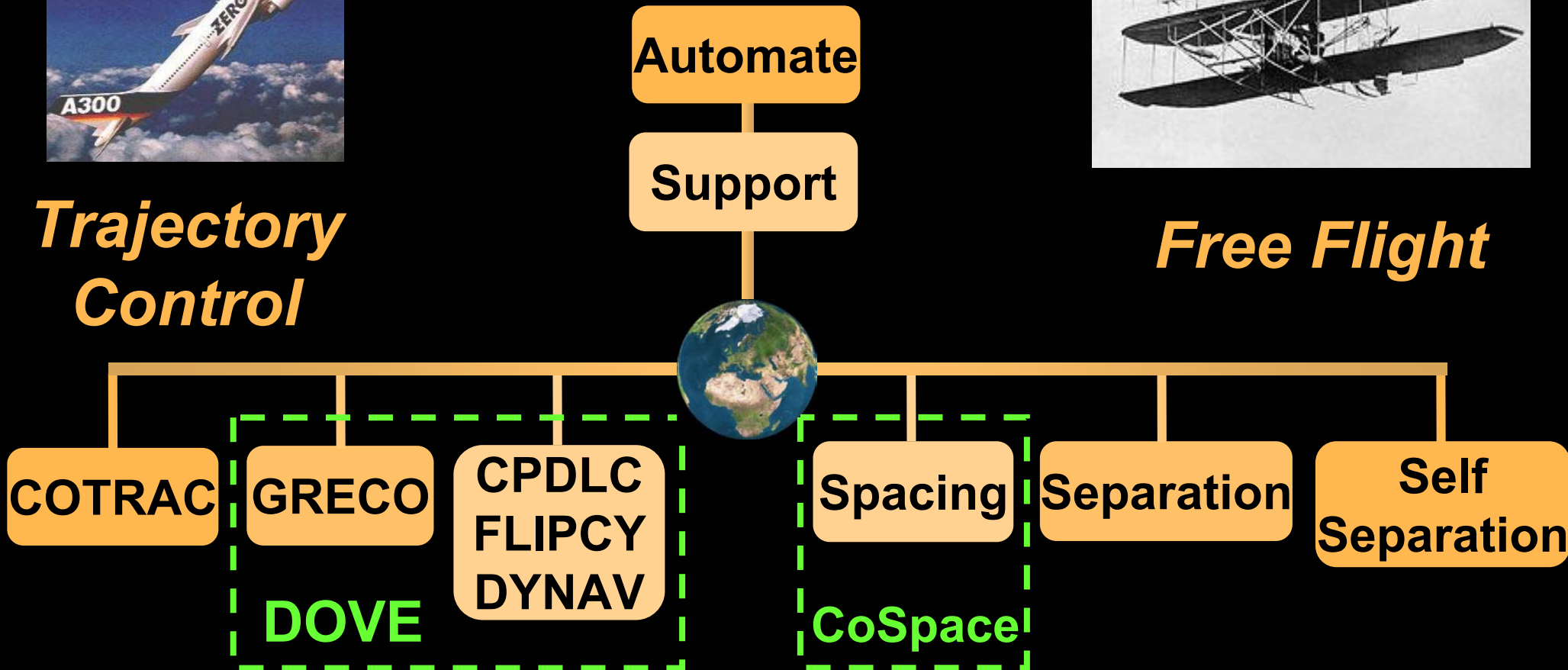
Situational Awareness Flight Management



Trajectory Control



Free Flight



CoopATS Benefits: Early work



Double capacity

Triple capacity



Free Flight



\$337,000,000 annual savings en-route
\$152,000,000 annual savings terminal

Realising CoopATS



AGC

Stakeholders

AGC PSG

ODIAC

Deliverables

Concept

ORs

CBA

Validation

FREER

DOVE

PETAL



STEP 1

ACARS
MCI

STEP 2

Link 2000+
Mode S
MCI

STEP 3

Next Link
ADS
MCI

STEP 4

wideband?
MCI

Today

2005

2008

2012

2020

- ◆ CoopATS provides the **Vision** for the future ATS
 - ❖ Optimises **ATS** through datalink and automation
 - ❖ **Human** centred approach
- ◆ More aspects:
 - ❖ Beyond **CDM**
 - ❖ Global development, cost-efficient and in steps
 - ❖ Military, Environment, etc...

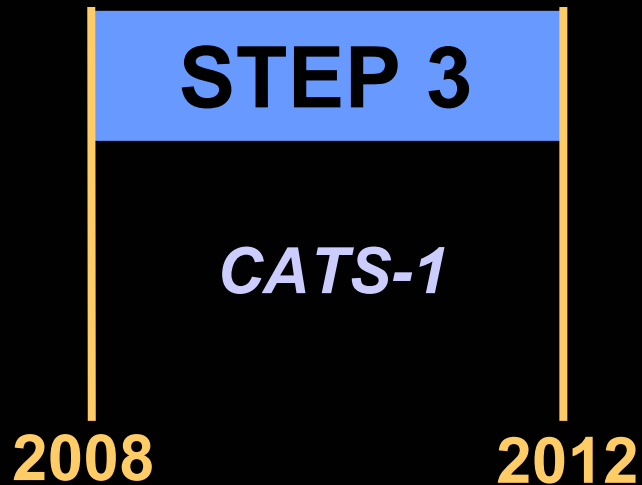
CoopATS: *Revolution through Evolution*

One SKY for Europe



with Cooperative ATS





- ◆ Multidisciplinary Programme proposal
- ◆ Co-ordinated implementation of **ALL** datalinks in step 3
- ◆ More market oriented
- ◆ Consolidated CBA

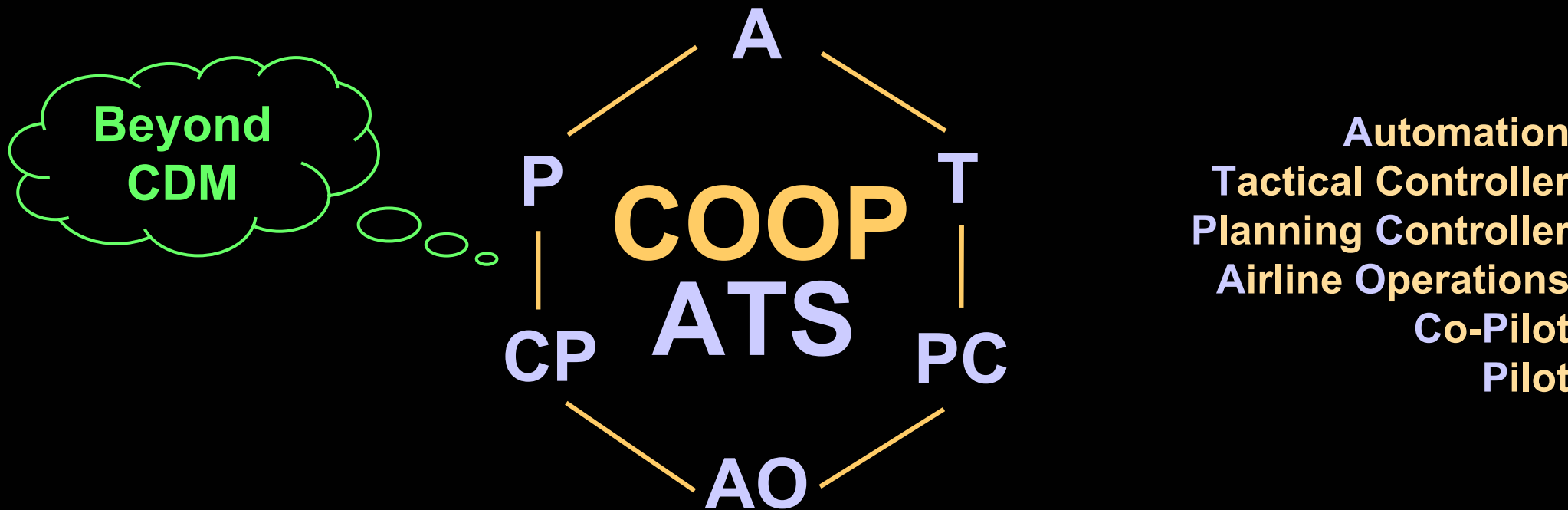


Options for ATS Datalink



1- Work Faster: Efficiency

2- Work Smarter: Effectiveness



COOPATS: *Redistributing ATS Tasks*

COOPATS Work Streams



DATA LINK FLIGHT INFORMATION SERVICES (D-FIS)

Automatic Terminal Information Service
Runway Visual Range delivery
Met Info (SIGMET, SPECI etc.)
NOTAM/SNOWTAM and Airspace Constraints

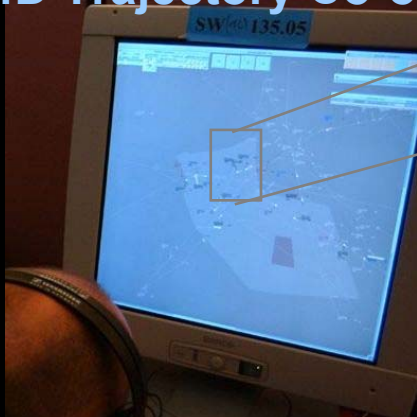
CONTROLLER/PILOT DATA LINK COMMUNICATIONS (CPDLC)

Departure Clearance
Start up/push back/taxi
ATC clearances (TMA, APP, Route)
Downstream clearances
Communications automation
4D Trajectory Co-ordination (GRECO/COTRAC)



AIRBORNE SEPARATION ASSISTANCE (ASAS)

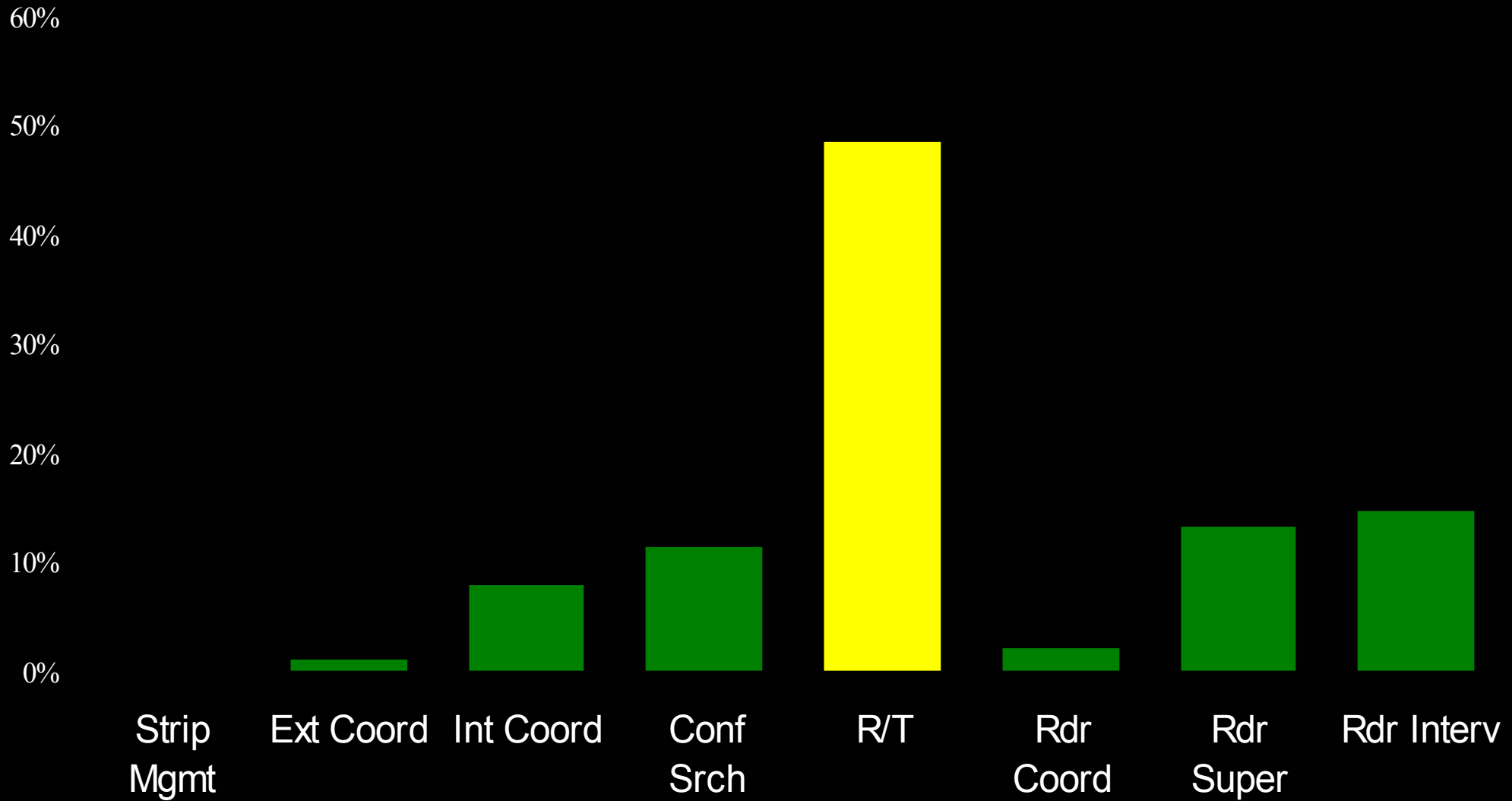
Airborne Traffic Situation Awareness
Spacing Applications
Separation Applications
Self-Separation Applications



AUTOMATED DOWNLINK OF AIRBORNE PARAMETERS (ADAP)

Elementary surveillance (Position + Identification + Altitude)
Enhanced surveillance (Heading + Speed + Short term intent)
Downlink of Pilot Preferences
Improved ATM through the use of FMS 4D Flight path intent

Initial Benefits



SYSCO Approximate Controller Workload Distribution



11% capacity increase, 22% delay reduction, 75% equipage
15% capacity increase, 26% delay reduction, 100% equipage

Mode S

>5% capacity increase, 75% equipage
6% capacity increase, 100% equipage

COOPATS Benefits



CAPACITY

SAFETY

ECONOMY

ENVIRONMENT

**Increased
Predictability**

**Human
Error
Reduction**

**Increased
Flight
Efficiency**

**Improved Task
Efficiency**

**Reduced
Workload**

**Increased
Situational
Awareness**

**Improved
Decision
Making**

**Alternative
Comms
Means**

**Control by
Exception**

**Trajectory
Control**

**Task
Redistribution**

**Information
Automation**

COOPATS Implementation



	STEP 1	STEP 2	STEP 3	STEP 4
AGC	DCL D-ATIS OCM	CPDLC (ACL ACM AMC) ADAP (CAP)	ASAS (P1) CPDLC+ ADAP+ D-FIS+	ASAS+ COTRAC
	ACARS MCI	Link 2000 Mode S MCI	ADS MCI	ADS MCI <i>wideband?</i>
	Today	2005	2008	2012
				2020